Wide-angle Compact Ion and Neutral Mass Spectrometer and Energy Analyzer

Completed Technology Project (2015 - 2016)

Project Introduction

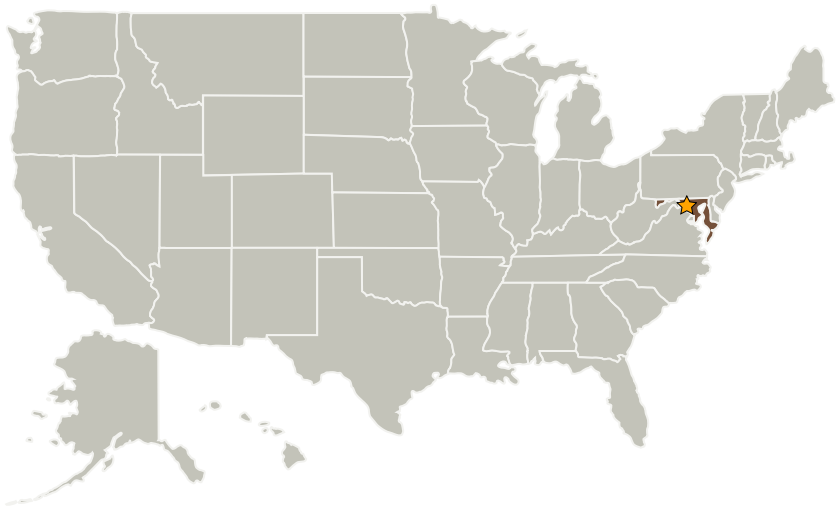
We propose to combine the traditional plasma analyzer with a gated TOF ion and neutral mass spectrometer to enable a full characterization of the ion distribution function, total ion and neutral density, ion and neutral composition, ion temperature and drifts, and neutral winds (when augmented with the Optical Angular Resolution Front End developed through a parallel IRAD). The development of this highly adaptable and compact spectrometer with energy analysis directly supports proposals to ROSES HTIDES (1), SIMPLEX (1), and Explorer-Mission of Opportunity (2).

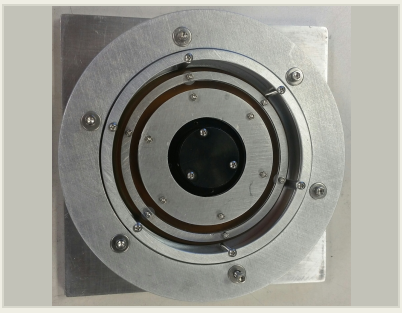
A laboratory prototype will be developed, including all of the critical sensor and electronics components from INMS, with added capabilities including higher max energy for scanning, increased mass resolution, and FOV deflectors.

Anticipated Benefits

We propose to combine the traditional plasma analyzer with a gated TOF ion and neutral mass spectrometer to enable a full characterization of the ion distribution function, total ion and neutral density, ion and neutral composition, ion temperature and drifts, and neutral winds (when augmented with the Optical Angular Resolution Front End developed through a parallel IRAD). The development of this highly adaptable and compact spectrometer with energy analysis directly supports proposals to ROSES HTIDES (1), SIMPLEX (1), and Explorer-Mission of Opportunity (2).

Primary U.S. Work Locations and Key Partners





INMS

Table of Contents

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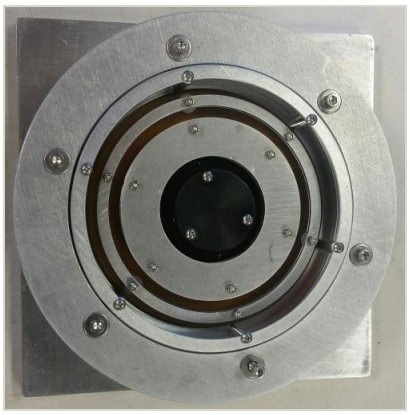
Completed Technology Project (2015 - 2016)

Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Images



INMS
INMS
(https://techport.nasa.gov/image/19147)

Links

1454104847
(no url provided)

Project Website:

http://sciences.gsfc.nasa.gov/sed/

Organizational Responsibility

Responsible Mission Directorate:
Mission Support Directorate (MSD)

Lead Center / Facility:
Goddard Space Flight Center (GSFC)

Responsible Program:
Center Independent Research & Development: GSFC IRAD

Project Management

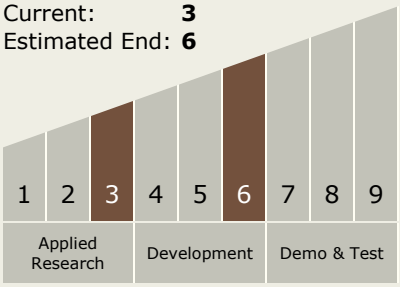
Program Manager:
Peter M Hughes

Project Manager:
Nikolaos Paschalidis

Principal Investigator:
Sarah L Jones

Technology Maturity (TRL)

Start: **3**
Current: **3**
Estimated End: **6**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.1 Field and Particle Detectors